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Women in IT: HOW DEEP IS THE BENCH?

Superstar women lead IT at some of the biggest global corporations, yet the path to the top isn't clear for the next generation.

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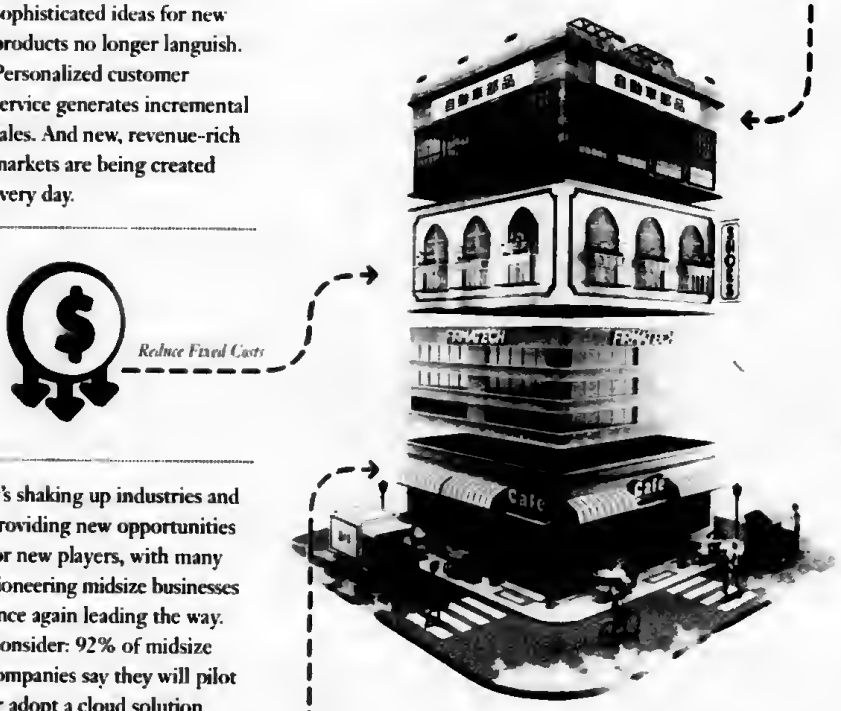

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Heads Up

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UTILITY INDUSTRY

Smart Meters Are Stupid About Privacy

RESEARCHERS at the University of South Carolina have discovered that some types of electricity meters broadcast unencrypted information that eavesdroppers with the right software could use to determine whether you're at home or not.

The automatic meter reading devices are installed in about one-third of U.S. homes and businesses. They make it possible for utility employees to get accurate meter readings by simply walking by a building with a handheld device, instead of physically accessing the premises and recording readings manually.

But at least one type of meter sends out a signal every 30 seconds regardless of whether a meter reader requested it, and that creates privacy risks.

Wenyuan Xu, an assistant professor at the University of South Carolina, said her team was able to capture data from electricity meters at a distance of up to 300 meters (about 984 feet). The data was in plain text and included the meter ID number; the name and address of the building's owner were not included, but it was possible to figure out that information.

Xu said she was able to pull data from target meters once every two to 10 minutes. With such frequent readings, it's possible to calculate the rate of power consumption in a house and determine whether someone's at home or not.

A new generation of meters is supposed to include encryption. But it's unclear whether the meters already installed will be replaced and, if so, when that might happen.

– *Martyn Williams, IDG News Service*

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DATABASES

Microsoft Adds In-Memory Tech To SQL Server

Hoping to speed online transaction processing, Microsoft is adding in-memory features to its SQL Server relational database manager.

The next version of SQL Server will allow users to host database tables, or even entire databases, within a server's memory. "Any application that is throttled by the I/O of a hard disk would benefit" by having its data moved into memory, said Doug Leland, a general manager in Microsoft's server and tools business.

The company is testing the technology, code-named Hekaton, with a number of its customers.

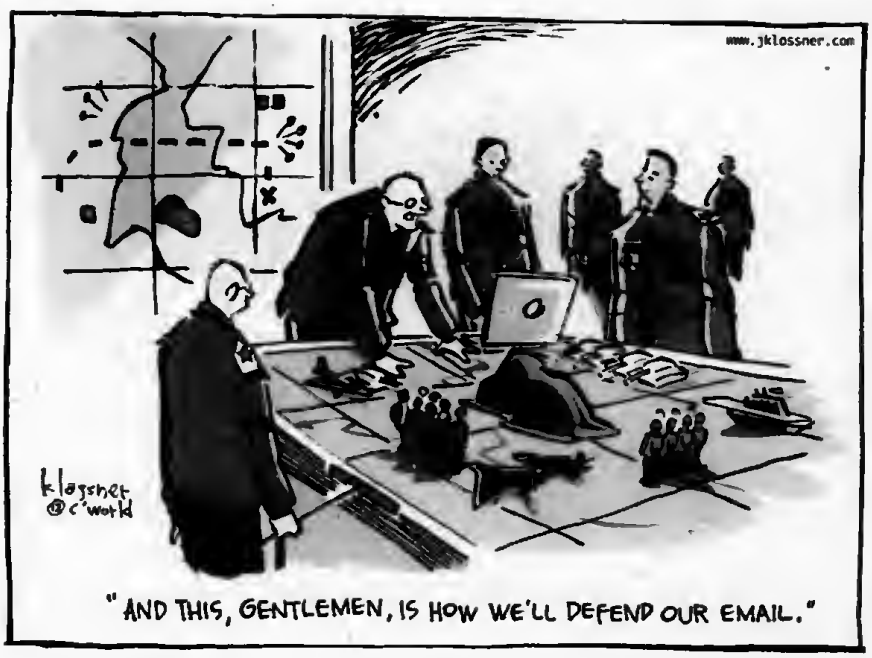
By holding a database table in memory, a server can execute transactions that use that table much more quickly, because it doesn't have to read data from nor write data to a disk. Microsoft predicts that its in-memory technology can run transactions 50 times faster than a standard SQL Server setup can.

To ease deployments, the next version of SQL Server will include a tool that allows database administrators to designate databases or individual tables that can be run in memory. No changes will be required of the applications that use the databases, Leland said.

Oracle's Exadata and SAP's HANA include in-memory support.

– JOAB JACKSON, IDG NEWS SERVICE

BETWEEN THE LINES
By John Klossner



SECURITY

Adobe to Fix Flash on Patch Tuesdays

ADOBE HAS changed its schedule for releasing Flash Player security updates to coincide with Microsoft's Patch Tuesday schedule.

"Microsoft and Adobe are now officially married," joked Andrew Storms, director of security operations at nCircle Security, a software vendor, in an email. "They started dating when they decided to share the MAPP program," and once Microsoft agreed to embed Flash into Internet Explorer 10, it was "inevitable" that Adobe would begin following Microsoft's patch schedule, he said.

Under MAPP, or the Microsoft Active Protections Program, Microsoft provides select security vendors with prepatch information to give them time to craft detection signatures for new exploits or malware.

In July 2010, Adobe began using MAPP to deliver vulnerability information about its own products to security firms. Microsoft issues its security updates on the second Tuesday of each month. Until now, Adobe has released Flash bug fixes at irregular intervals.

The lack of synchronization became an issue after Microsoft announced it would bake Flash Player into IE10 for Windows 8 and its tablet spin-off, Windows RT. Problems surfaced in September when Microsoft said it would not patch IE10 for at least six weeks, even though Adobe had issued updates the previous month that addressed at least one vulnerability that hackers were already exploiting.

Microsoft later recanted and issued an update to IE10. It then issued another in October, on the same day Adobe shipped its Flash fixes. Some criticized Microsoft for breaking its schedule and confusing customers.

Now, however, some security professionals are praising Adobe's change. "Concentrating updates on a single day is a benefit for any organization," said Wolfgang Kandek, CTO of security vendor Qualys, in an email. "[The new schedule] should streamline rollouts and get Flash updates [installed] more widely."

– Gregg Keizer

Micro Burst

The number of IT outsourcing contracts signed in Q3 fell

19%

from the same quarter last year, mostly due to economic uncertainty.

NETWORKING

AT&T to Spend $14B on Networks

Over the next three years, AT&T plans to spend $14 billion on capital improvements to its wired and wireless networks, including an expansion of 4G LTE service to 300 million people by the end of 2014.

The carrier said that its wireless investments will add up to $8 billion, and its outlays for wired technology will total $6 billion.

AT&T previously said that its LTE network would reach 250 million people nationwide by the end of 2013. To hit that goal, it plans to buy more wireless spectrum for its LTE service. In the 22 states where it offers wired voice and data services, AT&T plans to have its LTE network cover 99% of all customer locations.

The carrier also plans to deploy small-cell technology, macro cells and distributed antenna systems to improve the quality of its wireless service.

The initiative, called Project Velocity IP (or Project VIP), is part of the company's plan to spend $22 billion per year on capital improvements over the next three years.

On the wired side, AT&T said it will expand its U-Verse system for broadband Internet, adding 8.5 million customer locations for a total of 33 million. Also, U-Verse speeds will be improved to up to 75Mbps.

– MATT HAMBLEN

A security guard walks through a flooded street in Manhattan's financial district on Oct. 30.

Hurricane Sandy Leaves Wounded Servers Behind

As disaster recovery firms struggle to restore damaged data centers, experts warn of further storm-related breakdowns in the months ahead. By Patrick Thibodeau

DATA RECOVERY experts have been busy in the wake of Hurricane Sandy, which left a slew of data centers underwater, damaging equipment and posing a significant threat to business-critical data.

Apparently disregarding weather forecasters' widespread warnings and underestimating the power of the storm that hit the East Coast late last month, many businesses didn't begin moving computer and IT communications equipment out of harm's way until it was too late, say officials at companies that specialize in data recovery.

Many data centers were casualties of the massive storm, and the damage threatened to shut down major New York-based businesses and interrupt Internet service across the country, according to experts.

For instance, the storm forced two so-called carrier hotels — monolithic buildings that serve as major U.S. network hubs — in lower Manhattan to operate on generator power for a significant period of time.

The two buildings — a 2.9 million-square-foot structure at 111 8th Ave. and a 1.8 million-square-foot facility at 60 Hudson St. — are said to be critical to the nation's infrastructure because they allow data sharing between users of different online networks.

"There is a high probability that your Internet traffic, every time you go on a website, passes through 111 8th Ave. at some point," said Michael Levy, an analyst at Datacenters Tier1 Research, a division of 451 Research.

"Everybody just underestimated the strength of the hurricane," said Todd Johnson, vice president of operations at Kroll Ontrack, which provides data recovery services.

Weeks after the storm, service providers like Kroll were still working to recover data from enterprise servers overwhelmed by storm water surges or by spikes in power in the New York metropolitan area.

Johnson said some Kroll Ontrack customers found servers sitting in water that was 10 to 13 feet deep.

The storm-damaged equipment ranges from desktop computers to servers, including stand-alone RAID systems running office systems at midsize to large businesses located in coastal areas, Johnson said.

Another data recovery firm, Drive Savers, was also still working weeks after the storm to restore waterlogged drives for its customers, said spokeswoman Michelle Taylor.

Experts say it's possible that storm-related damage in data centers could lead to significant server problems down the road. Data center systems usually operate in controlled environments with steady temperatures and humidity levels, but Sandy caused flooding that may have damaged the systems that control heating and cooling equipment.

One data center reported temperatures rising above 100 degrees Fahrenheit as staffers scrambled to repair a generator.

By breaking the environmental cocoons that protect IT equipment, the storm may have wounded some servers and set them up for component failures weeks or months from now, said Scott Kinka, CTO of cloud services provider Evolve IP.

If equipment operates at higher-than-recommended temperatures, it could face a higher risk of component failure, and data center managers might see an uptick in component problems, he added.

However, it could be months before such problems arise, and by that time, it would be very difficult to definitively trace a failure back to its root cause, according to Kinka.

"The hard part about this one is you are just not going to know," he said. ◆

Everybody just underestimated the strength of the hurricane.

REUTERS/ADREES LATIF

Analytics Star In 2012 Election

Spot-on forecasts by quantitative analysts are hailed as 'a triumph of science over punditry.' By Jaikumar Vijayan

STATISTICAL MODELING techniques that retailers and manufacturers use to find and target customers helped some prognosticators predict the outcome of this month's U.S. elections with stunning accuracy.

Because of his connection to *The New York Times*, blogger Nate Silver may be the best-known quantitative analyst to accurately predict the election results, but many others also used statistical models and got similar results. The spot-on forecasts have focused unprecedented attention on quants, as quantitative analysts are known, and their ability to predict future events and trends.

As far back as June, Drew Linzer, an assistant professor of political science at Emory University, predicted in his blog, Votamatic, that Barack Obama would win re-election with at least 52% of the popular vote and 332 Electoral College votes. In the end, Obama took 51% of the popular vote and 332 electoral votes.

Linzer, like other quants who accurately predicted election results, made his forecasts by aggregating state-level poll data with economic indicators and data from previous polls. He started by constructing a baseline forecast for each state using the Time-For-Change statistical model developed years earlier by Emory colleague Alan Abramowitz.

Time-For-Change predicts the incumbent party candidate's national vote share by looking at factors such as the president's approval rating in June, the percentage change in gross domestic product in the first two quarters of the year, and the number of years the incumbent party has held the presidency.

Poll data is thrown into the mix as Election Day nears. "The basic idea is that on Election Day, or in the weeks leading to Election Day, polls are the best indicator," he said.

Despite minor fluctuations in support levels for the candidates, the data always showed Obama winning, he said.

"I never saw it as being a close race," Linzer said. "When I started producing my forecast in late May, the historical model that I was using showed that Obama would get about 52% of the major party vote."

David Rothschild, chief economist at Microsoft and developer of the model used by Yahoo's The Signal blog, which also accurately predicted the outcome of the presidential race, called the forecast "a triumph of science over punditry."

Back in February, before Mitt Romney had secured the Republican nomination, The Signal had a baseline forecast predicting an Obama win.

Rothschild said his model creates a baseline by evaluating historical data, state-level economic indicators and factors like the president's approval rating and the advantages of incumbency.

"For most of the election cycle, we had Obama at around 303 [Electoral College votes]," Rothschild said.

Ultimately, the accuracy of the polls made all the difference, said Josh Putnam, a visiting professor of political science at Davidson College and author of FHQ, another blog that early on predicted a 332-206 Obama electoral vote victory. If the polls had been wrong, the forecasts would have been wrong as well, he said.

Putnam didn't use statistical models; he simply aggregated state-level poll data to arrive at his forecasts.

"It was not very complicated," he said. "My forecasts were based simply on a weighted average of poll data." ◆

When I started producing my forecast in late May, the historical model that I was using showed that **Obama would get about 52%** of the major party vote.

ISTOCKPHOTO

THE Grill

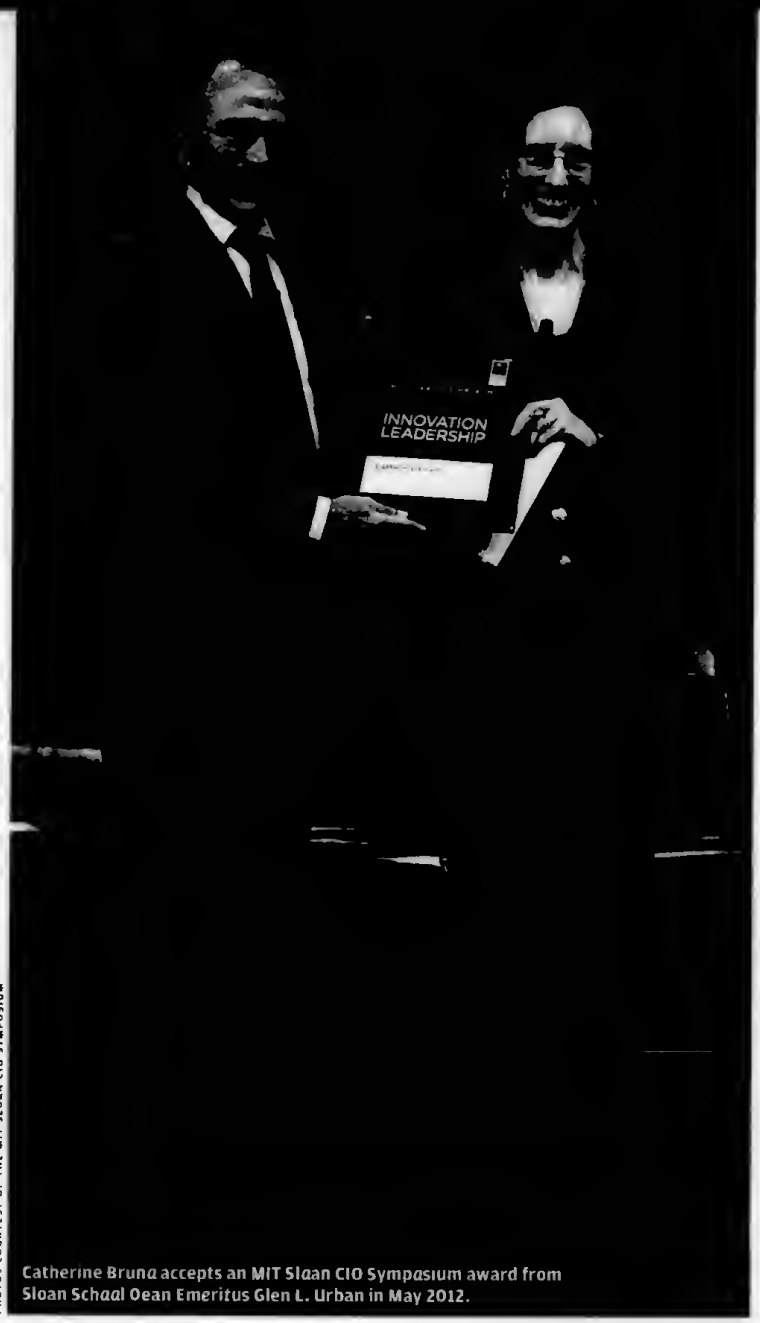
Catherine J. Bruno

This CIO helps steer a multimillion-dollar grant program that leverages IT to improve healthcare.

Family: Married for 35 years, with three adult children and three grandchildren.

Hometown: My father was in the Air Force, so I moved around a lot and learned to be very adaptable. I was born in Birmingham, Ala., but I didn't live there more than a year. The longest I lived anywhere was in Columbus, Ohio. I lived there 13 years, and I lived in Dallas 12 years. And now I'm in Hampden, Maine; I've been here eight years.

Do you have any long-term goals you'd still like to achieve? I'm learning to play the pipe organ. When I retire, my goal is to be a music minister at church.



PHOTOS COURTESY OF THE MIT SLOAN CIO SYMPOSIUM

Catherine Bruna accepts an MIT Slaan CIO Sympasium award from Sloan Schaal Oean Emeritus Glen L. Urban in May 2012.

CATHERINE BRUNO, *wha serves as vice president and CIO af Eastern Maine Healthcare Systems (EMHS), says she and her team are helping ta change peaple's lives by improving the quality af their medical care. It takes innovative IT to make that happen: Bruna has develaped and deployed an electronic health recard system, a computerized provider arder-entry system and a bedside medication verificatian system, amang ather accamplishments. She is also executive sponsor af the Bangor Beacan Cammunity grant program, which brings together a dazen local healthcare organizatians focused an improving medical care while reducing costs through the use af IT. In May, she received an MIT Sloan CIO Symposium 2012 Award for Innovation Leadership.*

What has been the biggest accomplishment for you and your organization? Working closely with our providers on electronic health records. It improves our ability to have high-quality healthcare, to make sure we're doing all the things we need to do to take

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> **The challenge when you have growth** like we had [in staff size and projects] is developing management leadership skills as quickly as you grow.

care of our patients, that we're meeting regulatory requirements, that we're able to take that information and then analyze it to improve the care we offer. And we have been able to leverage that for the $12.75 million grant for the Bangor Beacon Community. That money, from the Office of the National Coordinator for Health IT, goes toward improving people's health through care management facilitated by information technology. We chose four chronic diseases — diabetes, asthma, congestive heart failure and chronic obstructive pulmonary disease — and our primary care practices, EMHS and our community partners use care management and electronic health records to identify the issues with these chronic patients. [As a result] we reduced hospitalizations and ER visits by 40% within the first year of the grant.

What was the biggest challenge in getting this done? Traditionally we have worked in silos; there hasn't been an information flow among the various healthcare organizations in a community. So one of the things we did in the Bangor Beacon Community is share information among the practices and other hospitals in town. We had to build structures and governance to facilitate that collaboration and put structures in place for that information flow.

What's the big take-away from that experience? The key methodology I used was to make sure that the leaders of the organizations were involved and they chose clinicians and care managers and other people in their organizations to be involved with the grant and that everything was open and transparent. We had a retreat to kick it off to make sure we had buy-in from the key leaders in the community, and then we provided strong project management services and data analysis services that helped staff get the work done. We would follow up on milestones. We managed it like a collection of projects, and bringing that project management discipline was part of the success as well.

What's your biggest challenge moving forward as CIO? The pace of change has been accelerating, especially in healthcare. There's a lot of opportunity to expand and improve our electronic health records. We have regulatory projects like the move from ICD-9 to ICD-10. It's how we code to be able to tell the insurance companies what we did. It's like a Year 2000 project because of the format and the size of the field of the changes, and they're ubiquitous in our systems. We're doing that with a deadline of Oct. 1, 2014. On the electronic records side, we have meaningful-use incentives and requirements for that, and EMHS is a pioneer accountable care organization, so we're developing new systems and partnerships for that.

What is your secret to succeed in those areas? It's not really a secret. You surround yourself with great people. The challenge when you have growth like we had, in terms of size of our staff and the number and complexity of projects, is developing management leadership skills as quickly as you grow. Fortunately, I've got strong folks in the leadership roles at EMHS. That's the key, because it's my job to make sure they're going in the right direction and they know what the strategy is.

You're an executive sponsor. How does that differ from being a CIO? For the Bangor Beacon Community, the executive sponsor is like being the CEO for the grant. I was responsible for [ensuring] that the grant was organized, that we had appropriate governance and project management, that it was executed appropriately and according to what we said we were going to do on the grant application.

You earned an MBA in finance. What does that degree give you that an IT leader can't get on the job? It really gives you a broad business background, and the nice thing about the finance concentration is you can talk to chief financial officers. I thought about being a CFO when I got out of school, but I really fell in love with the information systems piece. And I think [the degree has been] very valuable in securing the resources we need to get all this work done in IS. It helped me to move into management, relate to terminology, the decision-making process, all those kinds of things. I would actually recommend an MBA for someone who wants to be a CIO rather than a master's in IS. ◆

— Interview by Computerworld *contributing writer* **Mary K. Pratt** *(marykpratt@verizon.net)*

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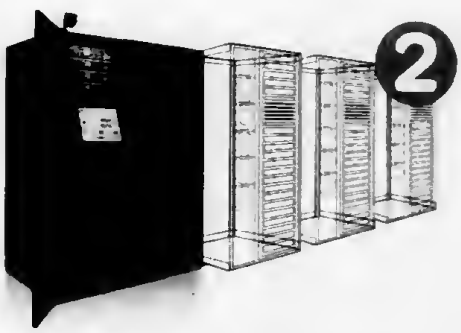

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OPINION

THORNTON A. MAY

Can Infosec Cure Stupid?

My colleagues quite rightly counsel me not to throw around the word 'stupid,' but sometimes no other will suffice.

IS THE WORLD DIGITIZING faster than we can handle it? As a very frequent flier (I'm on a plane about 280 days a year), I find that on just about any flight (you name the continent), in just about every row, passengers of every generation are actively engaged with a vast variety of digital apparatuses to either increase stimuli (music, video, e-books), reduce stimuli (the blessed Bose noise-canceling earphones), buy or sell something, or get work done.

But despite the ubiquity of the devices, hardly any of these people understand how all this gear works, where all the data that makes this magic happen comes from, how to fix things when they break and the implications of our technology usage behaviors on information security and privacy. This is the bomb that's ticking away in every infosec manager's nightmare: user ignorance. The question facing not just chief information security officers but all of us is, "How do we fix stupid?"

My colleagues in academia and my handlers at *Computerworld* quite rightly counsel me not to throw around the word *stupid* in print or online. Sometimes, though, no other word suffices. What other term can be applied to the employees and contractors at the Pentagon's Missile Defense Agency (MDA) who were "chided for using government computers to surf porn"?

Unlike employees of the MDA, most of us don't play a major role in this nation's ground- and sea-based missile defense programs. But our stupidity can nonetheless threaten our companies' security, if not the nation's. Take BYOD. Most often we focus on the "D," meaning the device, but we'd do well to give some regard to the "B" of "bring." Yes, users have a panting-dog desire to bring the device of their dreams with them wherever they go, but a surprisingly large number of them occasionally *leave* their devices behind. According to a report from the Ponemon Institute, "Airport Insecurity: The Case of Lost Laptops," up to 600,000 laptops are left behind in America's airports every year. In New York City alone, in the early days of the smartphone revolution, busy folk left 31,544 phones in cabs during one six-month period. Do we even need to talk about the number of USB drives left with dry cleaners?

As stupid as all of that sounds, it's not the kind of stupidity I'm really worried about. My deep concern is the systemic stupidity that arises from the fact that only a tiny fraction of the people living in this technologically complex world actually understand how any of this stuff works.

Personally, I acknowledge that I have been guilty of this kind of stupidity. But having recognized that I am not the sharpest knife in the drawer, I try to identify the sharp knives of my acquaintance and ask them how to hone my edge. The first step on the path out of stupidity and toward information security is to create an infosec brain trust: a group of people who are strategically, operationally and technically aware, and who are willing to answer your questions. Questions like, "Does this seem stupid to you?"

My brain trust consists of Dennis Devlin, of Information Security and Compliance Services at George Washington University; Malcolm Harkins, CISO and general manager of information risk and security at Intel; Eddie Schwartz, CISO at RSA; Steve Collignon, CISO at EIT Shared Services/ES Cardinal Health; and Peter Zuong, CISO at Ericsson.

Who are your go-to infosec "smarties," and what are they telling you? I'd love to compare notes. ◆

Thornton A. May is author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College in Jacksonville. You can contact him at thorntonamay@aol.com or follow him on Twitter (@deanitla).

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in IT: HOW DEEP BENCH?

Superstar women lead IT at some of the biggest global corporations, yet the path to the top isn't clear for the next generation.

BY TRACY MAYOR

DALY AND NEWTON / GETTY IMAGES

URSULA BURNS at Xerox. Ellen Kullman at DuPont. Ginni Rometty at IBM. And most famously, Marissa Mayer at Yahoo, with a baby on board and a Twitterstream in tow.

Each time a female engineer takes the helm at a prominent technology company, the industry breathes a sigh of relief and pats itself on the back. See? Self-proclaimed "girl geeks" like Mayer really can survive and thrive in IT and research.

Add to that the fact that more female CIOs than ever are leading the tech charge at Fortune 500 companies like Exxon Mobil, Boeing, Dell, Walmart, Bank of America, Xerox and GE, and it's easy to conclude that change really has come to one of the last male-dominated boxes on the corporate org chart.

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[2] Based on IDC white paper "The Economics of Virtualization: Moving Toward an Application-Based Cost Model," Michelle Bailey, November 2009, http://www.vmware.com/files/pdf/Virtualization-application-based-cost-model-WP-EN.pdf

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Or maybe not. According to data from the U.S. Department of Labor's Bureau of Labor Statistics, in 2011 women made up 57% of the country's professional workforce but held just 25% of the jobs in professional computing occupations. And those Fortune 500 female CIOs? They still account for just under 20% of the total, according to Boardroom Insider figures.

The persistently lopsided male-to-female ratios distress pioneering women like Nora Denzel, a former senior vice president at Intuit and Hewlett-Packard who graduated with a B.S. in computer science in 1984.

At the time, Denzel had no idea that the charge she was leading would wither behind her. "In the early '80s, the whole space thing was going on, PCs had just come out, the occupational projections were saying there was going to be such a shortage of talent," she recounts. "I wouldn't go as far as saying computer science was sexy, but there was that sense that the sky was the limit."

Flash forward almost 30 years to find Denzel, currently a member of the board of directors at the nonprofit Anita Borg Institute for Women and Technology, delivering the keynote address at the institute's recent 2012 Grace Hopper Celebration of Women in Computing conference in Baltimore.

The theme of her talk: "Are we there yet?" Her short answer: No.

"We were making progress until the mid '80s — the supply of women peaked at 37% in '85. None of us knew that by 2010, only 18% of CS undergrads would be women," she laments. "The numbers moved, but in reverse. It's a revolution in reverse."

Should corporations care if their IT workforce lacks women? Beyond check-the-box feel-goodism, is there any ROI in dedicating resources to cultivate, recruit, mentor and promote women in technical roles?

Absolutely, says Sophie Vandebroek, CTO at Xerox, which also has a female CEO and a female CIO. Female-friendly policies give an organization access to the full range of talent available in the marketplace. "It's hard enough finding people who meet our standards — exceptional Ph.D.s and engineers, especially U.S. citizens," she says. "Without a diverse organization, we're not going to be able to attract the best person for the job."

In addition to her CTO role, Vandebroek is president of the Xerox Innovation Group, which oversees Xerox's research centers in Europe, Asia, Canada and the U.S., including the storied Palo Alto Research Center (PARC).

"We have no problem hiring excellent people at PARC," she says with a laugh, "but how do we convince talented engineers to move to our Rochester, N.Y., facility?" Xerox's diversity initiatives are a key recruiting tool. "Nobody wants to be the only woman, or the only Hispanic, or young person, or the one gay person. They want to see others who look and act like them in the workplace."

Beyond making it easier to recruit other women, adding women to engineering and design teams makes those teams better able to address the needs of Xerox's customer base, which worldwide includes more women than men. Just one example: Women are more likely to be users of the company's multifunction office devices, says Vandebroek.

Overall, heterogeneous workgroups are more innovative, creative and productive than "just a bunch of people all thinking the same way" — a crucial concern for organizations like Xerox, where innovation has a direct impact on the bottom line, says Vandebroek.

Because her company has for many years sponsored large and active caucuses that support women at Xerox, as well as subgroups for technical women and women of color, among other minorities, Vandebroek feels she does have a deep bench from which to promote future female talent.

But that's not the case at every organization, she says — and that's an assessment shared by a number of young, midcareer and executive-level tech women. Their general takeaway: IT

GUY-CENTRIC CLASSROOMS CUBICLES

A LOOK AT the supply chain for IT professionals — high schools, colleges, universities and graduate schools — suggests that the gap between top-placed female IT professionals and those coming up the ranks isn't likely to close anytime soon. That's according to an analysis of educational data from various sources by The National Center for Women & Information Technology. Among other things, the group found that, in 2011, a majority (56%) of the students who took Advanced Placement tests were female, as were 46% of those who took the AP calculus test, but women accounted for just 19% of those who took

Debbie Madden

has come a long way in its attitudes toward women, but there's still a long way to go.

Midcareer Retention

As someone who has been recruiting developers and other tech employees in the New York area for the past 17 years, Debbie Madden counts herself among the ranks of senior technical women who are dismayed by the glacial pace of change.

"I just led a panel on how to become a developer. There were 150 people in the room, and if more than five of them were women, I'd be surprised," says Madden, executive vice president at software developer Cyrus Innovation. "When I was majoring in engineering, there was a lot of hope that women were finally starting to take on more of these STEM degrees. People were very hopeful, but I'm not seeing that now."

Madden worries that women might be taking themselves out of the mix early on in the game over work-life concerns. "One big problem is retention," she says. "Many women that I know, even when they're in their 20s, they choose careers that are going to allow them to have children. But when you're a developer working on a project, you need to be there five long days a week."

The up-all-night "brogrammer" culture at some startups doesn't help, she says. "No one's intentionally preventing female engineers from working at those companies; it's just an overall culture that's not appealing to a lot of women."

Jennifer Klopotoski, a Windows systems administrator team lead, has had few female role models in her education and career, but she feels well supported by her company, Ebsco Publishing, an Ipswich, Mass., supplier of databases and e-books.

In a computer science class at Boston's Northeastern University, she recalls being the only woman in a class of 30. "But I wasn't intimidated by that," she says. "I used it to my advantage to build on my strengths."

Klopotoski is one of three females in a 35-member department, and has no women directly up the ladder from her. But early on, she had a good male mentor who recognized her ambition. "I am definitely in a distinct minority, but I'm comfortable with that; it's part of my personality," she says. "I feel the doors are open to me at Ebsco. If you want to get ahead, you'll get there eventually."

Her current roadblock is the work-life balance that many parents with young children struggle with. Klopotoski and her husband, a network manager at a different company, can sometimes find themselves debating over whose network crisis is more important as they figure out which parent can leave work to pick up their two kids, ages 4 and 18 months. "It's difficult in the tech field — you can't just drop what you're doing at 3 o'clock if something is broken."

It's not lost on her that Yahoo's Mayer made it to the top before starting a family. "Having kids and now wanting to advance, it's a reverse kind of climb," Klopotoski acknowledges. "Am I going to be able to attain what I want? Maybe, but it's going to take five or 10 years."

Do Shifting Skill Sets Favor Women?

Multiple nonprofits have sprung up, many sponsored by tech corporations, to expose high school girls to programming, app development and more. The list includes The Technovation Challenge sponsored by nonprofit Iridescent, DigiGirlz classes from Microsoft, and Girls Who Code, backed by Google, eBay, General Electric and Twitter. The hope is that these efforts will result in more women studying science, technology, engineering and math — the so-called STEM fields — in college and graduate school.

In the meantime, there are indications that the shifting nature of high-tech employment may be working in favor of women.

As Denzel, who first made her mark in storage and later in the burgeoning field of big data, notes wryly, "The closer you are to the processor, the more male-dominated this already male-dominated field becomes."

the AP computer science exam.

Those ratios hold true in college: 57% of students earning an undergraduate degree in 2010 were women, but women made up only 18% of those majoring in computer and information sciences. That's not a one-year blip: The NCWIT found that there was a 79% drop in the number of first-year undergraduate women interested in majoring in computer science between 2000 and 2011.

Sara Edwards, an applications analyst at Asante Health System in Medford, Ore., who initially crossed over to IT via a clerical job in healthcare, believes the solution lies in changing how computer science is presented to female students in high school and college.

At her high school, only students who excelled in math, specifically calculus, were encouraged to sign up for the one programming class, which was an elective. "Computer science programs — all STEM classes, I think — need to be mandatory, not electives. If we could say to girls, 'You're going to try this out,' and get good teachers that make it fun for them, they might discover they really love programming," Edwards says. "You don't know what you're going to love until you do it."

Edwards is currently a senior pursuing a bachelor's degree in computer information science at Southern Oregon University. She says there are "never more than four or five" women in the classroom. What female professors she does have tend to be on the business side of the discipline; with one exception, the instructors who teach programming are all male. "They're not anti-female, they're very nice, and they'll help you if you need it," Edwards says. "But I do see a need in computer science for more women. We could use some mentoring."

— TRACY MAYOR

In contrast, the industry shift away from nuts and bolts and toward hybrid skill sets — including higher-level analytics, process and project management, and user-centric social and mobile computing — could open up opportunities for women to move laterally into tech departments from other specialties.

That's how it worked for Kathleen Healy-Collier, who holds bachelor's and master's degrees in healthcare and is preparing the oral defense of her Ph.D. thesis in health administration at the Medical University of South Carolina.

Healy-Collier is the administrative director — essentially, the IT director — at Le Bonheur Children's Hospital, which is part of a five-hospital coalition in Memphis. She says that she sees more and more women in healthcare making moves like hers.

"I've been in the industry for 18 years, and when I started out, it was totally male-dominated," says Healy-Collier. "If you go back even further, 30 years, healthcare systems were all 'man's work': in the back room, with paper-based records." The only integrated data systems tended to be financial or production tools, which appealed to a narrow audience. It's no surprise the CIO or IT director role went to a traditional IS or MIS graduate, most often a male.

Now, healthcare is undergoing a massive shift, and its IT systems are changing as well. "Organizations discovered that you can't just put IT on top of medicine; you need an understanding of the underlying critical workflow," Healy-Collier says. More often than not, the people with that clinical background are females.

"Administrators, executives, doctors and nurses — they are able to connect the dots for more technical people," says Healy-Collier. And they enjoy the work and are drawn to it in the way that wouldn't be true with a back-office IT function, she says. "Clinicians tend to be the ones who understand those systems best but also to be genuinely interested in that kind of interactivity and connectivity."

Xerox's Zahra Langford is one tech employee who enthusiastically embraces the concept of hybrid skill sets. Praised by Vandebroek (her boss's boss) as "an amazing, amazing woman," Langford started out as a theater major and then became interested in set design, which led her to Web design. She did OK for herself freelancing in Silicon Valley until the tech crash of 2002.

At that point, she went back to school "to try and get technical credentials for what I was kind of doing already," she says. She earned an MSI in human-computer interaction from the University of Michigan in 2005 and went to work for Xerox, where she had interned. An interaction designer, she is in her third post at Xerox.

If you want to be a VP, you need exposure to different parts of the organization, and Xerox is so large, if you just hang out in your own department, you're not going to move forward in a constructive way.

INTERACTION DESIGNER, XEROX

African-American and openly gay, Langford is a minority within a minority within a minority who on the face of it might seem an odd fit on Xerox's Rochester, N.Y., campus. But the company's range of affinity groups have made her and her partner feel welcome, she says — and they've helped her develop professionally.

"One thing the caucus groups do provide is a cross-company network," Langford explains. "If you want to be a VP, you need exposure to different parts of the organization, and Xerox is so large, if you just hang out in your own department, you're not going to move forward in a constructive way."

Mentoring from women at the executive level — Vandebroek, in particular — makes a difference as well, Langford says. "I had access to Sophie even as an intern. She was very involved in connecting with people and asking them to consider Xerox for the long term. She helped me realize this place is pretty special."

FOOTSTEPS FOLLOW

HAVING COME UP through the ranks when IT was not particularly tuned in to family concerns, Marina Lubinsky, senior vice president and CIO at hotelier Oakwood Worldwide, likes to keep an eye out for employees who may be in need of support with work-life challenges. Her concern stems directly from her own experiences in the early 1990s.

"I was in Europe with Arthur Andersen, which is now Accenture, when I started a family – twin boys," Lubinsky relates. "At that time, you were either on the track or off the track. The company was closed off on what to do with me, and I was pretty much closed off to any alternatives as well."

Lubinsky left, and worked at Disney and AIG before landing at Oakwood, where in 2009, she became the first female on its executive committee. "Now it's 50-50," she says. "Three of us are women."

As for the women in her organization, Lubinsky says, "We have conversations: 'How did you get where you are?' 'What struggles did you go through?' For 20 years now, I've juggled. I've been through it all."

Several years ago, when Joanna Tang, a systems architect at Oakwood, was thinking of resigning to spend more time with her two young children, Lubinsky offered her the opportunity to work from home.

"After I had my second child, I was feeling the need to be at home more," says Tang. "Marina was very supportive. She encouraged me to stay, and gave me the option to choose my time in the office." Having a manager who'd been through the same dilemmas helped. "I did think, well, if it worked out for [Lubinsky], it can work out for me," she says.

– TRACY MAYOR

Glass Ceiling or Sticky Floor?

Tina Rourk, CIO of Wyndham Vacation Ownership, oversees about 300 employees and estimates that about 30% of her staff, including two of her four direct reports, are women. Rourk sees strong opportunity for the women, particularly in hospitality, long a female-friendly field.

But at the same time, she shies away from putting too much emphasis on gender, noting that her first priority is always to hire the best candidate for a position. Rourk says that worked for her coming up in the field and she would hope it works for the women coming behind her. "I knew IT was male-dominated from the outset. That didn't change the decisions that I made," Rourk says. "You have to build relationships — that's my responsibility, whether it's a male or female colleague."

If anything, Rourk is concerned that women working in the male-dominated environment of IT might unintentionally be backing off when they should be pushing ahead. "Is it the glass ceiling or the sticky floor that's the problem?" she asks rhetorically. "You need to make sure others know what you want; you need to raise your hand for further opportunities. I had to learn to do that."

In the end, that's the message that may resonate most deeply with the newest generation of women in high tech, people like 29-year-old Laura Beth Denker, a senior software engineer who has been in the minority ever since her days at the Rochester Institute of Technology — but who seemingly pays it no nevermind.

Laura Beth Denker

True, Denker works at Etsy, an online marketplace for handmade goods, which skews heavily female and sponsors hacker grants for women interested in programming. But she politely turns her nose up at talk of soft skills or future-forward specialties like communication or business analytics. She is pure programmer and proud of it: Her LinkedIn skill set for Etsy consists of a string of nouns like Apache, Chef, Cobbler, Ganglia, Gearman, Graphite, LDAP, Nagios, PEAR, PECL, Postfix, Racktables, RPM and Yum.

Denker also shrugs off any suggestion that she is a next-gen superstar — she insists her previous employer, Google, plucked her résumé out of a pile from Monster.com.

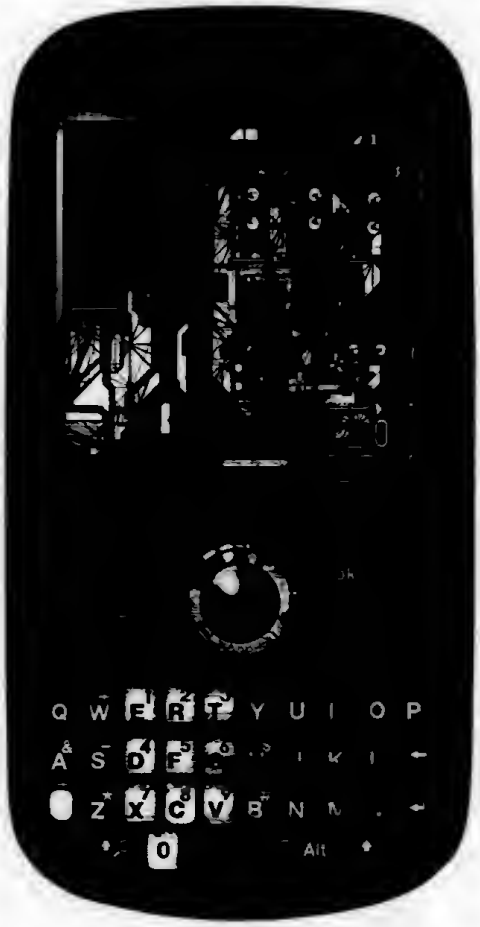
She has studied and worked in male-dominated organizations her whole life — she estimates her current workgroup's male-to-female ratio is 8-to-1 — but when asked about future opportunities, she turns the question on its ear.

"It's not really, 'Can I get a job at this company?' — it's 'Why would I want to work there?' " she explains. "You have to think about yourself and go where you feel comfortable. If people want to be brogrammers or whatever, fine, but they're missing out on more than half the universe."

Despite the persistent lack of gender parity in IT, younger women have managed to absorb a kind of post-gender mindset that anticipates the tech future before it happens.

"I wouldn't want anyone looking at me as a female engineer, because I'm an engineer, period," says Denker. "I've never had a manager, man or woman, who's looked at me as just a female, which is a good thing. My work speaks for me, so look at my work." ◆

Research assistance by **Mari Keefe** *and* **Sharon Machlis**.



Smartphone [WORK] zone

Emerging containerization technologies create a separate, protected workspace on employees' personal smartphones.

BY ROBERT L. MITCHELL

ANTHONY PERKINS wants employees at BNY Mellon to bring their personal smartphones to work and use those instead of company-issued BlackBerries to access business email, applications and data.

But there's a catch: Not all employees are comfortable with the prospect of having their personal phones locked down and controlled as tightly as the BlackBerries that Perkins would like to phase out. That's where the notion of containerization comes in.

A bring-your-own-device (BYOD) strategy is good business, says Perkins, CIO for BNY Mellon's Wealth Management business. It reduces the time and expense involved with maintaining and managing company-owned BlackBerries. "We'd like to be in the business of managing software, not hardware. In the RIM world, you manage hardware," he says, referring to BlackBerry maker Research In Motion.

On the downside, today's popular mobile devices were developed for the consumer market, and third-party management tools don't offer the same degree of control over user devices that RIM systems have over BlackBerries. RIM designed and controls the BlackBerry client architecture and has been especially responsive to the needs of corporate customers.

Because corporate apps and data are often mixed in with the user's personal content, mobile device management (MDM) tools tend to be very strict when it comes to managing corporate resources on users' phones. Usage policies often apply to the entire device, covering both personal and professional apps and data. Users may not be willing to give up control of their personal phones in exchange for the privilege of using them for business.

To get around such user resistance, Perkins is turning to containerization, an emerging class of management technology that carves out a separate, encrypted zone on the user's smartphone within which some corporate apps and data can reside. Under such an arrangement, policy controls apply only to what's in the container, rather than to the entire device.

Containerization tools are typically complementary to MDM software, and an increasing number of MDM vendors are incorporating containerization functionality.

But as great as containment is for safeguarding corporate data, it doesn't necessarily prevent personal data from being lost in a wipe by the IT department if a phone is lost or stolen. Some IT shops recognize that some users may not know how to properly back up their personal data and apps and are helping them set up backup systems.

Ryan Terry, division CIO and chief security officer

THINKSTOCK

at University Hospitals Health System in Shaker Heights, Ohio, turned to containerization because he sees the use of traditional MDM tools to control the entire device as a liability issue. The hospital needs to have apps or data delivered securely to clinicians without interfering witb the users' ability to access their personal apps and data. "We can't afford to delete things of a personal nature or impede their ability to use their personal asset," he says.

Alex Yohn, assistant director of technology at West Virginia University, is also wary. "I don't want my guys doing settings on the personal side that could come back to baunt us," such as accidentally deleting data or making configuration changes that affect how the users' personal apps run, be says.

For companies in highly regulated industries that need strong security policies and face strict compliance mandates, containerization can be especially helpful in making the BYOD experience more palatable for users, IT leaders say.

Choose Your Container

Vendors offer, in essence, three different approaches to containerization: creating an encrypted space, or folder, into which applications and data may he poured; creating a protective "app wrapper" that creates a secure bubble around each corporate application and its associated data; and using mobile hypervisors, which create an entire virtual mobile phone on the user's device that's strictly for business use.

All of these approaches offer more granular control over corporate applications and data on users' devices than whatever security comes standard with smartphones currently. And with containerization, users aren't limited to using devices on an approved list of smartphones that have been certified and tested by IT, because corporate apps and data reside inside a secure, encrypted shell.

However, the need to switch back and forth between the business and personal environments may he perceived as inconvenient and affect overall user satisfaction, says Phillip Redman, an analyst at Gartner.

Neither Apple nor Google offer containerization technology, and neither would comment for this story, but each company did point out some resources that might be helpful (see story, page 23).

Encrypted Folders

The most mature containerization approach is the use of an encrypted, folder-based container, Redman explains. AirWatch has such an offering, and Good Technology is an early leader in sales to organizations that have adopted containerization enterprisewide, particularly within regulated industries.

For basic mobile access, BNY Mellon uses Good for Enterprise to create an encrypted space on smartphones within which users can run Good's email and calendar client and use a secured browser. "It's a secure container with an app that can send and receive corporate email that's encrypted," says Perkins. All communications are routed through Good's network operations center, which authenticates mobile users.

Good has been offering its basic email and calendaring tools for several years. Late last year, it added the capability for other apps to run within its protected space using the Good Dynamics Platform, but each app must be modified to run in Good's proprietary environment. So far, about a dozen commercial apps are available, including QuickOffice, which is typically used for reading and editing downloaded Microsoft Office file attachments.

Perkins is using Good only for email and calendar — the "killer apps" for most employees, he says — and accessing internal, browser-based apps using Good's browser.

For users who need complete access to the corporate network, SharePoint and other services, BNY Mellon uses Fiberlink's MaaS360, a cloud-based MDM system that can take complete control of a user's device. MaaS360 monitors what gets written to and from tbe operating system, and it blocks access to some personal apps, such as Yaboo Mail and Gmail, when the device is accessing corporate resources.

> **We can't afford to delete things of a personal nature or impede [end users'] ability to use their personal asset.**
>
> **RYAN TERRY,** DIVISION CIO AND CSO, UNIVERSITY HOSPITALS HEALTH SYSTEM

"When it's on our network, we own it and control it," says Perkins. When used in personal mode, individuals have control over whicb apps they can use.

What's more, BNY Mellon may wipe devices — including all personal apps and data — that are lost or stolen, although MaaS360 and most other major MDM tools do allow selective wipes. Citing security concerns, Perkins declined to say how many times the company has had to wipe phones.

In contrast, only the corporate container is wiped from lost or stolen devices that just have email and calendar access via the Good technology.

App Wrapping

A newer, more granular approach is to enclose individual apps in their own encrypted policy wrappers, or containers. This allows administrators to tailor policies to each app. The market for tools that support app wrapping is dominated by small vendors with proprietary products, including Mocana, Bitzer

Mobile, OpenPeak and Nukona (which was recently acquired by Symantec).

For its part, RIM is working on adding this capability to its BlackBerry Mobile Fusion MDM software. (Mobile Fusion works with Android and iPhone devices in addition to BlackBerries.) Peter Devenyi, senior vice president of enterprise software at RIM, says the company's offering will be "a containerized solution where one can wrap an application without the need to modify source code so you can run it as a corporate application and manage it as a corporate asset."

With app-wrapping tools, "you can put together a pretty complete, fully wrapped productivity suite that's encrypted and controllable," says Jeff Fugitt, vice president of marketing at mobile integrator Vox Mobile. But the technology has not been widely adopted.

Forrester analyst Christian Kane describes app wrapping as an "application-level VPN" that lets administrators set policies to determine what the app can interact with on the user's device or on the Web, and what access the app has to back-end resources. It also allows for remote wiping of the container, including the app and any associated data.

Application wrapping is not mature.

PHILLIP REDMAN, ANALYST, GARTNER

"Application wrapping is not mature," and the existence of competing architectures in this nascent market is holding back growth, says Gartner's Redman. But, he adds, app wrapping will eventually be more widely adopted when the technology is integrated into the larger and more established MDM platforms.

The downside to app wrapping is that each application must be modified, which means administrators need access to the app's binary code. That means some apps that come preinstalled on Android or iOS phones may not be supported. Also, implementations may work more smoothly with Android devices than with iOS because of problems getting binary code for apps sold via Apple's App Store. For this reason, wrapping tools tend not to work with iPhone apps. For example, Mocana's Mobile App Protection product doesn't support the email client on the iPhone — or other built-in apps, for that matter.

Users can get access to the binary code for free iOS apps, but for App Store wares that must be purchased, IT needs an agreement to buy direct from the provider and bypass Apple's store.

Apple currently turns a blind eye to users who employ app wrapping or change apps bought from its App Store, "but by their rules, you're not supposed to do that," says Redman. "They could clamp down and not allow that, although so far they haven't." Apple declined to comment (see story, page 23).

Mobile Hypervisors

The third approach to containment is to create a virtual machine that includes its own instance of the mobile operating system — a virtual phone within a phone. This requires that the vendor work with smartphone makers and carriers to embed and support a hypervisor on the phone. Such technology isn't generally available yet, but devices that support a hypervisor may eventually allow users to separate personal and business voice and data.

VMware is developing an offering called VMware Horizon. It will support Android and iOS, and function as a Type 2 hypervisor, which means the virtual machine runs as a guest on top of the native installation of the device's operating system.

Having a guest OS run on top of a host operating system tends to consume more resources than a Type 1 "bare metal" hypervisor that's installed directly on the mobile device hardware. It's also considered a less secure approach, since the host operating system could be compromised, creating a path of attack into the virtual machine.

Another vendor, Open Kernel Labs, offers a Type 1 hypervisor that it calls "defense-grade virtualization." Open Kernel's technology is currently used mostly by mobile chipset and smartphone manufacturers that serve the military. The company has yet to break into the commercial market, says Redman.

Developing a Type 1 hypervisor that interacts directly with the hardware is impractical, says Ben Goodman, lead evangelist for VMware Horizon. "We moved to a Type 2 hypervisor because the speed at which mobile devices are being revised makes it nearly impossible to keep up," he says.

As for security, VMware is working on an encryption approach similar to the Trusted Computing Group's Trusted Platform Module standard. It's also researching jail-break detection.

Performance won't be a problem, says Goodman, vowing that "VMware Horizon is optimized to run extremely well." But VMware declined to provide the names of early adopters who could discuss the product.

Israeli startup Cellrox offers its own twist on virtualization for Android devices. The technology, called ThinVisor, was developed at Columbia University. It's neither a Type 1 nor a Type 2 hypervisor, but "a different level of virtualization that resides in the OS and allows multiple instances of the OS using the same kernel," says Cellrox CEO Omer Eiferman. The vendor offers ThinVisor to cellular service providers, smartphone manufacturers and large enterprise customers.

Problems and Promise

One problem with containerization is that not all products support iOS, which powers iPhones, the smartphones most commonly found in enterprises. While Apple has a 22% share of the worldwide smartphone market, compared with 50% for Android devices, those figures are reversed in the enterprise:

The iPhone has 60% of that market, versus 10% for Android devices, according to Gartner.

Apple's legendary secrecy about operating system enhancements means containerization vendors receive no advance notice and must scramble every time the vendor releases an update. The bottom line: Users may have trouble accessing corporate systems if they upgrade their personal iPhones too quickly. At University Hospitals, says Terry, "iOS changes often cause service interruptions while Good Technology's products are modified, tested, then released."

Directory integration is another area where tools are still evolving. "We'd like to see more integration with Active Directory and with PeopleSoft or whatever the source of record is to control user profiles — ideally, tighter integration that would disable access automatically or restrict access to published applications based on a user's role," Terry says. Today, businesses may need to turn to integrators such as Vox Mobile to provide that level of integration.

Containerization can also make it difficult to provide tech support for users' personal devices if IT doesn't have visibility into the performance of the total device, says Steve Chong, manager of messaging and collaboration at Union Bank, which uses Good for Enterprise. He notes that there are a number of questions that are difficult to answer with containerization: Is the problem related to signal strength? Has the user run out of storage space? Is there a way for IT to remotely access the phone to diagnose issues?

"Having agents on the phone means that it needs to be constantly on all the time for data gathering, but that means that it will consume phone resources," Chong says. Also, it's "software that now needs to be managed and updated on users' phones."

Today, organizations with BYOD programs either aren't using MDM or are using basic tools like Microsoft's Exchange ActiveSync, which allows mobile access to users' Exchange email and calendars. "The next phase is getting to MDM. Then [IT] can look at application security and management," Redman says.

At CareerBuilder, a jobs website and staffing firm, employees who want to use their own phones can connect to the enterprise via ActiveSync, but downloaded data is not encrypted unless the user does so at the device level. Further, IT doesn't offer support for users connecting with their own smartphones.

CareerBuilder users can also install, on their own, apps to access SaaS applications such as Concur and Salesforce.com. "We defaulted to that," says Roger Fugett, senior vice president of IT. But with nearly half of the company's 2,600 employees now bringing their own devices, Fugett says he's taking a hard look at the potential risks and how to mitigate them. Containerization and general MDM tools are on his radar. ◆

Apple Google

POKESMEN FOR APPLE AND GOOGLE [illegible]

GOOGLE

Google Apps for Business, Government and Education administrators can use the Google Apps Control Panel to manage end users' Android, iOS and Windows Mobile devices at the system level. The panel allows the device to sync with Google Apps, encrypts data and configures password settings.

[illegible]

APPLE

Apple says it supports third-party MDM tools. It allows MOM servers to manage in-house apps and third-party apps from the App Store and supports the removal of any or all apps and data managed by the MOM server.

[illegible]

– ROBERT L. MITCHELL

Career Mapping DONE RIGHT

Specially designed development plans help tech workers navigate the choppy waters of IT employment. **BY MARY K. PRATT**

"WHAT'S MY NEXT MOVE?"

At some point in their careers, most IT professionals will ask this question of their managers — and, unfortunately, many managers will be ill equipped to answer in depth. Either they won't have a good grasp of the employee's talents, interests and goals, or they will lack details on potential career paths within their companies — or both.

Linda Tedlie is one IT leader who doesn't have that problem. When an employee recently asked her the "what's next" question, Tedlie, a senior manager in career development at Kimberly-Clark's Information Technology Services (ITS) organization, pulled up a career map for that worker.

She was able to discuss the employee's existing role and capabilities and identify other positions at the Dallas-based paper products maker that matched that individual's skills and aspirations. Then she could plan the steps the employee should take to reach a target position — a more senior IT job within Kimberly-Clark's mergers and acquisitions department.

Career mapping, or pathing, as it's sometimes known, originated in the field of human resources and has since branched out. It's particularly valuable

NPHOTOS / GETTY IMAGES

to larger organizations that are seeking to institutionalize their career management programs, enhance their workforce development and succession planning strategies, and cut down on costly employee defections, according to Ginny Clarke, president and CEO of Talent Optimization Partners in Chicago and author of *Career Mapping: Charting Your Course in the New World of Work*.

Smaller companies, Clarke observes, are less likely to have formal career-mapping programs simply because they have fewer internal opportunities to track.

A career map pulls together different sets of information to give employees and their managers a view of where they are, where they can go and how to get to the jobs they want.

Clarke says that companies generally have compiled some of those pieces — usually lists of jobs in the organization and the competencies required for each one, plus résumés for individual workers. But up until now, few employers have put together all of the pieces — the lists of jobs and résumés plus other information, such as new skills employees have acquired or their latest career aspirations — to create a holistic view of potential career progression based on skills, competencies and goals.

A career map can include some or all of these elements: historical plotting (which matches job titles to competencies), a list of aspirations, a skills-gap analysis, a plan to add competencies, a target list of companies and positions to research and track, and specific networking goals.

It's a trend Clarke hopes will catch on. "I'd love to see more IT managers take more ownership of these activities because they are so critical to the performance" of the IT team, she says. "You need to find a CIO — and a CEO — who values [mapping], then it will trickle down."

Setting Expectations

At Kimberly-Clark, which has 56,000 employees, every department has a process in place to help people advance their careers, but ITS decided three years ago to further enhance the system for its 900 workers.

Using a new tool called Skills Framework for the Information Age (SFIAplus), ITS created a platform that allows IT employees to build detailed individual development plans, explains Gene Bernier, director of the Program Management Office, an 80-employee team within ITS.

The platform "gives individuals a different perspective, one they wouldn't have had otherwise. It opens up lines of communication, and it [gives people] more control over their career development," says Bernier, who spearheaded the career mapping effort in the IT department.

Like Kimberly-Clark, Mueller Water Products previously plotted courses for professional growth for employees but has recently adopted a more disciplined and detailed approach to mapping possible opportunities — and expectations — for employees, says senior vice president, CTO and CIO Robert Keefe, a past chairman of the Society for Information Management.

"If there's a geographic move required, if there's a move out of IT that's expected, career mapping sets [those] expectations with the individual. We lay out what the possibilities are," Keefe says.

The Atlanta-based water infrastructure company launched its version of career mapping several years ago with UAchieve, a program supported by senior leadership and executed by the HR department. Like many organizations, Keefe says, Mueller Water Products separates this process from annual reviews and merit-pay increases to help keep the focus on long-term visions and not on year-to-year objectives.

The program — which all IT workers are expected to participate in — collects information about individual employees and their current positions and skills. Keefe explains that some of the information may have been on employees' résumés, but it didn't get incorporated into a system where it would be accessible and transparent. For example, some staffers could speak foreign languages but not many people knew that they had those skills before UAchieve was deployed.

As part of the process, Keefe says, employees are asked to consider certain scenarios, such as whether they're willing to move to another city or take a position in another business division to gain skills required for future positions.

Based on the collected information, Keefe says the company works with individuals at all levels, including management, to determine what opportunities are available for them down the road and what they can do to be ready for them.

Benefits to the company include improved succession planning and a vibrant workplace of challenged, engaged employees, Keefe says.

But there can be downsides to career mapping for employers, he warns. At Mueller Water, a midlevel IT manager realized after he'd completed the mapping process that the company didn't have the position he aspired to. So the 10-year veteran, whom Keefe says he saw as a future IT leader, took a job at another company where he could gain the skills he needed to do what he wanted, which was to run a manufacturing facility.

[Mapping] helps the organization answer the question 'What kind of talent do we need?'

CAELA FARREN, PRESIDENT, MASTERYWORKS

IT leaders who use career mapping say organizations can't rely on employee input alone if they want such programs to succeed. Company leaders must also go through the exercise, with the goal of understanding and articulating the requirements of different positions and then outlining the skills and experience required to do each job.

That process "helps the organization answer the question 'What kind of talent do we need?' " says Caela Farren, president of MasteryWorks, a career and talent management consulting firm in Falls Church, Va.

Farren's firm works with companies to identify the core competencies required for particular jobs, the positions that will be key for future growth and development, and any new positions that will come into existence — plus the skills and accomplishments that will qualify people for those jobs.

With all of that information spelled out in one place, managers can easily identify what staff resources they'll need going forward and whether they have that talent in-house or will have to seek it elsewhere. •

Pratt *is a* Computerworld *contributing writer in Waltham, Mass. You can contact her at marykpratt@verizon.net.*

Security Manager's Journal

MATHIAS THURMAN

Trouble Ticket

Not-So-Innocent Distribution Lists

IS EVERYTHING a potential security vulnerability? Is there nothing that a security manager shouldn't look at with suspicion?

What, for example, could seem more innocent than an email distribution list? Such lists are convenient and ubiquitous, and in a company of any size at all, indispensable. They let you send an email to everyone in, say, marketing, by just putting the name of the marketing group in your email's "to" field. You don't have to worry about leaving anyone out, as long as your company's Exchange or Notes administrator sees to it that the lists are kept up to date. They certainly don't seem suspect.

computerworld.com/blogs/security

Last week, however, distribution lists were implicated when we looked into something that turned out to be a rather brazen phishing expedition.

It started with the help desk receiving emails from several employees complaining that they were unable to access our company's payroll website and that they had gotten emails stating that either the certificate used to access the payroll site had expired (and they needed to click on a link to validate the certificate) or the password for the site had expired (and they needed to log in to change the password). That sounded like phishing to me, and sure enough, when I moved my curser over the link in the email, a very different Web address was displayed.

Wanting to know more, we investigated the link. What we found was that any user who had done the same was encouraged to install a file. We then downloaded the file in a secure environment for forensic analysis and identified it as a piece of malicious software for connecting to a site in China. It looked as if the idea was to trick unsuspecting users into making their PCs available to a command-and-control network operated out of China. Fortunately, our endpoint protection client is able to detect the software and prevent it from executing. Unfortunately, at any given time, about 6% to 7% of our desktops are not protected or haven't been updated with the proper pattern files, so there is the possibility that some machines on our network are now zombies.

But what does any of this have to do with distribution lists? Well, the phishing email was sent to an externally available distribution list with more than 900 users. That made it easy for us to determine which machines might be compromised, so we'll be able to check each one and make sure it has the proper endpoint protection client installed.

> **"Distribution lists were implicated when we looked into a rather brazen phishing attempt.**

Rein In Those Lists

There was no good reason for this distribution list to be externally available. That led me to ask our email administrators how many of our distribution lists are configured similarly. The answer was astonishing: We have more than 3,000 distribution lists (and just 4,000 employees, mind you), and more than 400 of them are externally available. I can't see any reason why our external partners would need more than 20 or 30 lists. Clearly, we have a process problem.

In fact, some of our help desk staffers have been marking distribution lists as externally available by default. They will be educated to do otherwise. We are also going to audit all of the externally available lists and eliminate any for which there is no business justification. From now on, no distribution list will be externally available without my approval.

To ensure compliance, I'm having our security analyst investigate whether we can use our security incident and event management tool to alert us when a newly created distribution list is marked as "externally available." I've also asked our email administrators to investigate why our external spam-filtering service didn't protect us from this attack. And finally, this is a great opportunity to send out a global email to warn everyone about phishing attacks and provide tips on how to spot one. ◆

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

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Source: *Harvey Ad Measurement Study, Computerworld May 10, 2010

Career Watch

ASK A PREMIER 100 IT LEADER

Todd S. Coombes

The CIO at CNO Financial Group answers questions about **finding a mentor** *and choosing between consulting and being an employee.*

How should I go about getting a mentor? I am currently an IT director at a midsize company. First, observe potential mentors – leaders who are accessible to you and have a leadership style you admire.

Rank the potential mentors by those you admire most and would get the greatest benefit from. Approach them one at a time, starting at the top of your list. (And before you approach anyone, you should clear it with your HR department and your boss.) Don't approach the second person on your list until you've heard from the first, or you could end up in an awkward situation.

When you ask someone to be your mentor, explain why you selected him or her. Most people like praise and enjoy being asked for their advice.

I became a consultant after being laid off. I'm doing well, with some long-term commitments. One of those has led to a job offer. On one hand, I like my independence, but running your own business can be a hassle. And having been laid off from a position that seemed to promise stability, I'm wary. What should I do? Compare the pros and cons. When faced with complex choices, I sometimes use a weighted decision scorecard.

First, identify the most important decision criteria. You mentioned independence, ownership hassle and stability. These may be at the top of your list, but there could be others, including compensation, benefits, growth prospects, preferences of family members and travel.

Next, you need to weigh the relative importance of the criteria. One way to do this is to assign each criterion a percentage of importance so that they total 100. Next, score each item on a 0-10 scale for how well it fits consulting, and do the same for becoming an employee. Multiply the scores by the corresponding criteria item weighting percentages and then sum the totals for your two choices. If the scoring comparison is too close to call, consult others whom you trust and respect and then make your best decision.

■ **REALITY CHECK / ROBERT L. MITCHELL**

IT Jobs: The Hot — And Not So Hot

Robert Half Technology's annual salary guide for IT professionals, released last month, offers some insights into which career tracks are rising and which are lagging. The staffing firm's guide includes current salary ranges and projections for 2013 for more than 70 IT positions. The data was culled from an analysis of placements for the first eight months of 2012 and from the results of quarterly surveys of CIOs. I sorted the data to create this overview of what's hot and what's not. More charts are available on my blog, Reality Check, at Computerworld.com, and you can read the full guide on the Salary Center page at RobertHalfTechnology.com. Want to know where you fit in? Here's the deal in a couple of easy-to-parse snapshots.

11 IT Jobs With the Highest Projected Growth in Income, 2012 to 2013

The IT jobs projected to show the biggest increases in compensation next year fall into three categories: mobile and Web development, networking, and data/analytics. In an up economy, the average IT position might receive a salary increase of 3% to 4%, so the 7%-to-9% increases for the 11 jobs below are impressive.

Mobile application developer	9%
Wireless network engineer	7.9%
Network engineer	7.8%
Data modeler	7.6%
Database portal administrator	7.5%
Data warehouse manager	7.4%
Senior Web developer	7.3%
Web developer	7.3%
Business intelligence analyst	7.3%
Network architect	7%
Network manager	7%

SOURCE: ROBERT HALF TECHNOLOGY 2013 SALARY GUIDE

10 IT Jobs With the Lowest Projected Growth in Income, 2012 to 2013

The laggards, as you might expect, include lower-end roles such as computer operators and desktop support analysts. The increase in compensation for those roles isn't even likely to keep up with inflation. Moreover, pathways to advancement from those positions to more lucrative IT roles are often limited.

Computer operator	1.6%
Desktop support analyst	2.1%
Mainframe systems programmer	2.2%
Telecommunications manager	3.1%
Instructor/trainer	3.2%
Operations manager	3.3%
IT manager	3.3%
Telecommunications specialist	3.4%
Technical writer	3.5%
QA/testing manager	3.7%

SOURCE: ROBERT HALF TECHNOLOGY 2013 SALARY GUIDE

Given the projected rise in compensation for IT network jobs, it was a bit surprising to see telecommunications manager among the laggards, especially since voice and data have converged in many organizations. It's also interesting that the midlevel role of IT manager will see only a modest increase, perhaps reflecting a thinning of the ranks in that layer as more functions move to the cloud.

Research in Motion Corporation (US), Irving, TX, positions are available

TX7024 – Software Developer

TX7025 – IOT Specialist

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Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below

Support Engineer (Mountain View, CA), **#1615.4244**. Design, develop, modify, and/or test sw needed for various internet search engine co projects. Exp. incl prog skills, such as C++, Java, PL/SQL, Unix, or Python, proj mgmnt & data analysis.

Web Master (Information Architect) (Mountain View, CA), **#1615.2132**. Design, develop, modify, and/or test Google's web-based systems, architecture, and related features. Exp. incl: global-scale website design, prod & consumer business models, user-centered design skills, data analysis, usability, & user research, web mrktng strategies, trends, & best practices, coordination with intl teams on global proj, database & content mgmnt syst; content strategies & branding, HTML & CSS, Jscript, & Django templating syst.

SW Eng Positions (Mountain View, CA). Design, develop, modify, and/or test sw needed for various Google projects. Exp. incl:

#1615.1476: design data processing, Java, C++, document indexing, backend functions; and spam filter.

#1615.4609: design & prob/perf analysis of large scale distrib syst; Proto buffer & RPC library usage cases & perf bottlenecks, data extract & analysis, data mine for large amounts of data, C++, Java, & Python, co tech TCP/IP, & algorithm dvlpmnt & implement. Up to 25% trvl req'd.

#1615.3458: C++, Python, data struct & algorithms, large-scale data analysis & infrast, & machine learning systems.

#1615.1080: C++, STL, funct program paradigm, Perforce, algorithms & data struct, AI, large scale data mine mach learn, & probability & stats.

#1615.3932: C, C++, Java, Python, or Jscript; design, dvlpmnt, analysis & troubleshoot large-scale distrib syst, info retrieval, data mine, & mach learn, data struct, algorithms & complexity analysis, large-scale data process & stat analysis, & database design & program.

#1615.1458: large scale sw dvlpmnt in C, C++, & Python, design highly scalable distrib storage syst, consensus algorithms, ntwrkng tools & protocols, strong & loosely consistent storage syst, algorithms, complexity analysis, optimize, & op syst. Up to 25% trvl req'd.

#1615.1632: C, C++, &/or Java, multithread info security, ntwrk security, cryptography, distrib syst; syst debug, & perf analysis & optimize.

#1615.2723: compilers, comp graphics, adv algorithms & virtual machines, C++, Java, Objective-C, Python; HTML5, CSS, & Cocoa.

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Site Reliability Engineer (Mountain View, CA.) **#1615.2736**: Design, develop, modify, and/or test software needed for various Google projects. Exp incl: large distributed system, C++, Python and Go; proj mgmnt; stat analysis of large data sets; multi-thread program; syst & ntwrk admin, & problem & perf analysis of distrib syst.
Staff Software Engineer Positions (Mountain View, CA) Design, develop, modify, and/or test software needed for various Google projects. Exp incl: **#1615.3167**: oo design, design large-scale distrib syst; multi-phase transactions; perf analysis of large syst; web-front end tech; security & testing; & lead team of eng's.
#1615.1448: design & dvlpmnt of dashboard apps at all tiers (UI, frontend, backend) of the syst; design & arch of web apps & web browsers; design, dvlpmnt & perf analysis of large scale distrib sw; dvlpmnt of data process pipelines; backend servers; & data storage syst.
SW Eng Positions (Mountain View, CA): Design, develop, modify, and/or test sw needed for various internet search engine co projects. Exp incl: **#1615.667**: C & C++; multithread, STL, parallel, scalable & distrib compute code review; stat analysis of algorithms & graph theory & apps.
#1615.3434: C++; Java; Linux & Unix; large scale data process, info retrieval, AI, shell script; & dvlpmnt of server side code.
#1615.1138: algorithms; data struct; design, dvlpmnt, debug & optimize large scale distrib syst & mach learn.
#1615.2745: large scale data syst, low-latency server arch, design scalable APIs; C, C++, or Java Unix; algorithms & data struct.
#1615.1876: distrib compute syst; C++ Java, & Python; data analysis, stats & mach learn.

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Partner Manager, (NY, NY) **1615.2973**: Manage and analyze revenue generated through Google products. Exp incl: commercial partner mgmnt, sales & sales support func; MS Excel; drafting of agreements & contracts; bus plan dvlpmnt; public speaking at events; negotiate deals/agreements, lead cross funct team; delivering bus reviews & prod pitches with C level exec at private & public co; quantitative mrktng reviews, & dvlp net present value & ROI calculations.
Staff Software Engineer (NY, NY) **#1615.3306**: Design, develop, modify, and/or test sw needed for various internet search engine co. projects. Exp incl: HTTPS; SSL/TLS implement; C++; Linux, dvlp sw, & security syst. Up to 10% trvl req'd.
SW Eng Position (NY, NY) Design, develop, modify, and/or test sw needed for various Google projects. Exp incl: **#1615.812**: large software system design and development experience; Unix or Linux, and C++.
#1615.450: data struct; algorithms, Java, C# or C++, Jscript, Linux or UNIX, HTML, & dvlpmnt of web appl.
#1615.1060: design & dvlp stat mach learn, AI methods, design & dvlp high perf parallel syst; distrib compute algorithms, design & dvlp oo sw in C++ and Java; & Python.
#1615.895: Java; UI design, JUnit test, script lang, incl Bash; large-scale database design & SQL; refactor legacy syst; creation of robust, high-vol appl, real-time process syst; troubleshoot & debug complex live syst, design, implement, test & maint of complex subsyst; handling & process of SPII data; automated test frmwrk, modify existing code bases, & dvlpmnt of prototypes.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below:
SW Eng Position (Mountain View, CA) Design, develop, modify, and/or test sw needed for various Google projects. Exp incl: **#1615.2073**: large scale distrib syst; algorithms; debug; C++, data analysis; & data mine.
#1615.1902: design & program distrib syst; Java; oo program; algorithms; & sw design.
#1615.2027: oo program skills; database design & program; UNIX/Linux environ & oper syst principles; distrib syst, parallel computation, multithread, input/output (IO), & ntwrkng; using debuggers to isolate & fix bugs & perf issues & write unit & funct tests to ensure complete code coverage; algorithm design & implement & analysis of runtime & memory reqmnts; & Python.
#1615.4225: C++, Jscript; HTML; CSS; source control tools; data mine, algorithms & data struct; high perf server app dvlpmnt; sw design, dvlpmnt, debug & test; write test plans & automatic tests for server & web apps, & research & dvlpmnt in mach learn algorithms & stat data analysis tech, Java & Python.

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Pls ref job # below:
Web Developer (San Bruno, CA), **#1615.4029**: Design, develop, modify, and/or test Google's web-based systems, architecture, and related features. Exp incl: oo program; primary dvlpmnt lang & exec env, incl Jscript, CSS, HTML, & web browsers; Jscript libraries; Jscript & CSS compilation tools, for ex: Closure Jscript compiler; web standards, incl HTML5 & CSS3; security, latency, cross-domain commun, browser/platform differences, front-end integration issues, for ex: Flash interaction with page & back-end or Ajax interaction with back-end syst; script lang, incl Python; UNIX & source control tools; natural app of design patterns to design new features; standard app & ntwrk debug tools to diagnose & resolve prod issues, for ex: HTTP request, response sniffers, or debug proxy & usability & web design.

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Build architecture for complex IT architecture. Dev multi-tier web applns, crystal reports UI, Oracle & Sql server procedures. Develop .Net MVC appl with HTML5 & Dojo. Use technologies such as java, C#, J2ee, Rational Tools, Filenet, DB2 (Code#109).

Sr. Swr Eng positions require BS or MS or equiv (or foreign equiv) in CS, Engg(any), IT or rltd field, w/2 to 5 yrs exper.

Sr. Database Administrators(DB2 UDB). Admin, impl, maintain, manage DB2 UDB databases & systems. E-R modeling, DB2 database backup/recovery. Dev unix shell & database SQL scripts. (Code#107). Req's Masters (or foreign equiv) in any field & 2 1/2 yrs exper.

May req travel &/or relocation to various unanticipated client sites nationally. Mail res with code#, to HR, Brite Systems, 101 West Ohio St, #1010, Indianapolis, IN 46204. EOE.

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Ad Serving Solutions Consultant (San Francisco, CA) **#1615.4007**: Design, develop, modify, and/or test software needed for various internet search engine company projects. Exp incl: C, C++, Java, & Perl, PL/SQL, databases (Oracle) & admin oper syst (Linux Enterprise Server); & HTML, CSS, Jscript, & web servers.
Software Engineer Position (San Francisco, CA): Design, develop, modify, and/or test sw needed for various Google projects. Exp. Incl:

#1615.640: Python, Jscript & AJAX; database design, SQL; TCP/IP & ntwrk program, data analysis, metrics, & trends data struct; algorithms; & large syst sw designs & dvlpmnt. Up to 40% trvl req'd.

Computer Professionals for CA based IT firm: Sr. Software Engineers: Plan, dsgn, dvlp, enhance, customize, direct & implement s/w systems. Coordinate s/w programming, system testing, validation procedures & dvlpmnt of documentation. Implement adv. s/w module components in complex database systems & computing environments on diff. O/S etc. Sr. Programmer Analysts: Plan, dsgn, dvlp, create, test & modify comp. applications s/w & specialized utility pgrms. System dvlpmnt & implementation in web based applications on diff. O/S using latest technologies. Dvlp interfaces & reports to improve efficiency, troubleshoot etc. Programmer Analysts: Dsgn, dvlp, create & modify comp. applications s/w and/or specialized utility programs. Anlyz user needs & dvlp s/w solutions using multiple tools on diff. O/S etc. Apply w/2 copies of res. to HR, Shubh Solutions, LLC, 10225 Barnes Canyon Rd., Ste # A206, San Diego, CA 92121

Interested candidates send resume to: Google Inc., PO Box 26184 San Francisco, CA 94126 attn: Lisa Harrington. Please reference job # below:
Software Engineer Positions (Kirkland and Seattle, WA) Design, develop, modify, and/or test sw needed for various internet search engine co. projects. Exp. Incl.:

#1615.601: Java, Jscript, HTML5, CSS3; UI program, distrib compute, client & server protocols; data storage index, & querying, algorithms, testing & test automation, & dependency injection.
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SHARKTANK

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Hey Look, I Found One!

This manager pilot fish is responsible for his company's EDI server – the one that processes all orders, invoices, bills of lading and every other kind of e-paperwork. "I noticed a failing drive light on the RAID-1 two-disk array for the C: drive, so I asked the very experienced network admin if there were any spares available," says fish. "He said no, so I told him to order one and replace the failing drive."

That should be pretty simple, and since the second RAID-1 drive is just a mirror of the main drive, this is no emergency. But a few minutes later, network admin tells fish he won't need to order the replacement – he's found a spare and already swapped it in. Fish's worried reaction: Where did you get the drive? Network admin replies that there was a spare in the server bays. Show me, says fish. It only takes a few seconds for fish to realize what the network admin has done: He's removed the drive containing all the applications, data and archives for the EDI system and put it in the RAID-1 bay. Sighs fish, "It shut down a $300 million company's order processing for three weeks."

If You Don't Know, We Don't Either

User calls this pilot fish in a panic because email freezes up when she tries to send a certain message. "I made my way to her desk to investigate," says fish. "She told me how the email had been forwarded from user to user and no one else had any problems with it." And indeed, nothing in the message looks strange, the email client's settings look fine, and when fish tests it from his own PC, the message forwards perfectly. So fish calls the user to tell her that someone will be over to reload her email client. By the way, he asks, have you had any related problems? User: "What problems would I be having?" Fish: "Anything to do with your email." User: "What problems are you talking about?" Fish: "Problems with your email." User: "Is there anyone there that can tell me what problems I could be having?" Fish: (sighs) "Thank you. Someone will be over to reload your client."

Just Like It Says

User calls this support pilot fish about a problem the user is having with Microsoft Outlook: "I'm not getting any email, and I think it is because my Microsoft is out." Reports fish, "Upon observing the user's Windows XP workstation, I discover that Outlook is sorting by priority instead of date, which resolves the no-email issue immediately. Then I ask, 'Now, what did you mean when you said your Microsoft was out?' User points to the bottom of the screen at the Task Bar, where the Microsoft Outlook task icon is truncated to read 'Microsoft Out.'"

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OPINION

SCOT FINNIE

Personal Syncing to the Cloud Is Broken; Let's Fix It

Vendors seem to be more interested in positioning their wares than in delivering true integration.

THE FREE WEB SERVICES that sync your personal data — contacts, calendar, bookmarks, email — to the cloud promise device independence. That's very attractive in an age when many of us have two, three and even four computing devices.

For many years, my personal productivity Holy Grail was to make all my data accessible at all times. That pursuit led me down interesting paths, ones that sometimes went against IT policies. I BYOD'd my work computer more than five years ago, and today one machine doubles as my work and home computer. The email package running on it gathers both work and personal email.

I regard everything I read, view or write as personal data. Those things often relate to more structured personal data, such as contacts, calendaring and logins. The trouble is, there's no single syncing service that is able to reliably, and without fuss, sync even most of these data types to the cloud. Even worse, the current crop of data-syncing services don't play nicely with one another.

The one that comes closest to being a unified service is iCloud. Basic syncing services for contacts, reminders, notes and file storage are easy to set up, and they work well enough. But iCloud's email and calendar syncing are quite limited. And while iCloud works well with all types of devices, it's nearly useless if those devices didn't come from Apple. Android need not apply. If your PC runs Windows 7 or Vista, you can use a limited version of iCloud.

Microsoft's Windows Live offers cloud-based file storage and webmail, but it's fledgling at best. Office 365 has more of the right stuff, but it's not a free service; prices start at $4 a seat per month.

Google doesn't offer unified data syncing like iCloud, but its applications and services are powerful and mature. Google's contacts, calendaring, file storage, IMAP and webmail, and Web-based document software suite are all solid. Windows users can sync Google contacts and calendars with Outlook. Mac users can't, however.

It's an old story: The vendors behind sync services seem to be more interested in positioning their wares against those of their competitors than in delivering solid services that integrate with a variety of platforms and syncing scenarios.

Here's why calendar syncing among iCal, Google Contacts and Mac Outlook 2011 doesn't work: Microsoft doesn't support the CalDAV protocol in Mac Office 2011. (Why? It does in Outlook 2010 for Windows.) Apple abandoned its own Apple Sync Services (which Office 2011 does support, ironically) in favor of its own flavor of CalDAV — which oddly won't sync with Google's CalDAV-based calendar. And Google hasn't provided Mac support for its Google Sync utility. It would seem they don't want it to work.

Making cloud-based personal data syncing viable in the real world should be as much of a given as incorporating a TCP/IP stack into operating systems was during the mid-1990s, when the Internet was becoming prevalent.

The reality of interconnecting your devices via the cloud is a baby step. What comes next could be transformative, though. We have little control over our virtual identities, the data about ourselves we enter into websites. Each social medium, bank, store and Web service is an island of our data. What if we controlled that centrally? Think about it.

It's time to stop playing around with freebie, toy data-syncing services. Let's make this work. ◆

Scot Finnie is *Computerworld*'s editor in chief. You can contact him at sfinnie@computerworld.com and follow him on Twitter (@ScotFinnie).

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